

U.S. Application No.: 10/781,304
Amendment A
Reply to Office Action Dated 1/16/07

ATTORNEY DOCKET NO.: 3926.067

IN THE CLAIMS:

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The following listing of claims replaces any earlier listing:

- 1-20. (cancelled)
21. (currently amended) A process for layer-by-layer production of a three dimensional body, including repeating the sequence of steps:
- applying a layer of powder particles, by means of a dispensing device, upon a substrate;
 - subjecting the applied layer of powder particles to ionized particles (7) produced by an ionizing device (6) during falling of the powder particles onto the substrate;
 - brushing the applied layer flat by a flattening device (8) an electrically insulated blade;
 - activating, in defined areas of said layer, an adhesive present on the powder particles and/or in the powder particle layer; and
 - solidifying the activated adhesive to adhere powder particles to each other within the layer and to the substrate; and
 - providing at least one further ionizing device (6') associated with the flattening device (8), the further ionizing device (6') exposing the applied powder particles to further charged particles (7').
22. (currently amended) [[A]] The process according to Claim 21, further comprising subjecting the powder particles, during or immediately after leaving the dispensing device, to the ionized particles and/or allowing said powder particles to freefall through a charged cloud of the ionized particles (space charge, electric field).
23. (currently amended) [[A]] The process according to Claim 21, wherein the charge differential on the powder particles is reduced by the ionized particles.

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24. (currently amended) [[A]] The process according to Claim 21, wherein the deposited layer, prior to flattening, is essentially free of powder particle agglomerates.
25. (currently amended) [[A]] The process according to Claim 21, wherein at least one of the powder layers following flattening has a thickness of less than 100 μm .
26. (currently amended) [[A]] The process according to Claim 21, wherein the powder particles are coated with an activatable adhesive material.
27. (currently amended) [[A]] The process according to Claim 26, wherein the adhesive material is comprised of polymers, which are soluble in an organic solvent based binder liquid.
28. (currently amended) [[A]] The process according to Claim 27, wherein the adhesive material is activated in defined areas by a binder liquid.
29. (currently amended) [[A]] The process according to Claim 28, wherein the binder liquid is resolidified at least in part upon exposure to thermal radiation.
30. (currently amended) [[A]] The process according to Claim 29, wherein the amount of the binder liquid applied is sufficient only for moistening or wetting to a depth of maximally 20 average powder particle diameters of the powder particles.
31. (currently amended) [[A]] The process according to Claim 26, wherein the adhesive is comprised of polymers which sinter or fuse upon irradiation with laser light.
32. (currently amended) [[A]] The process according to Claim 31, wherein the adhesive is fused or sintered in defined areas by laser radiation.

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33. (withdrawn – currently amended) A device for carrying out the process according to claim 21 ~~layer-by-layer buildup of three dimensional bodies from adhered powder particles~~, comprising:
- a conveyor device (3) for applying powder particles (5) to a substrate;
 - an ionizing device (6) for subjecting the powder particles (5) to charged particles (7) during falling of the powder particles onto the substrate;
 - a flattening device (8) for brushing flat an exposed powder particle layer on said substrate;
 - a binder or solvent emitting nozzle or a laser light source for activation of an adhesive present on the powder particles and/or in the powder particle layer; and
 - ~~wherein~~ at least one further ionizing device (6') is associated with said flattening device (8), ~~which the further ionizing device (6') exposes~~ exposing the applied powder particles to further charged particles (7').
34. (withdrawn – currently amended) ~~[[A]]~~ The device according to Claim 33, wherein ~~at least one further the~~ the ionizing device (6) ~~is provided, which~~ subjects the powder particles (5) to the charged particles (7) as they leave or directly after they leave the conveyor device (3).
35. (withdrawn – currently amended) ~~[[A]]~~ The device according to Claim ~~[[33]]~~ 34, wherein the ionizing device (6) and the further ionizing device (6') ~~(6, 6')~~ is ~~are~~ adapted to dissipate the electrical charge of the powder particles.
36. (withdrawn – currently amended) ~~[[A]]~~ The device according to Claim 33, wherein the flattening device (8) is an electrically insulated blade (8) ~~is provided, which~~ brushes flat the powder particle layer applied upon the substrate.

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37. (withdrawn – currently amended) ~~[[A]]~~ The device according to Claim 33, wherein at least one further ionizing device (6') produces a cloud of ionized air (charged space), which is pushed ahead of the blade during the step of brushing flat.
38. (withdrawn – currently amended) ~~[[A]]~~ The device according to Claim 33, wherein a radiation device (11) is provided for thermal radiation for drying the powder particle layer.
39. (withdrawn – currently amended) A three dimensional body of adhered powder particle layers produced by the process according to claim 21, ~~a process including repeating the sequence of steps:~~
- ~~— applying a layer of powder particles (5) upon a substrate via a dispensing device and/or a conveyor device (3) for applying powder particles to a substrate;~~
 - ~~— subjecting the applied layer of powder particles to ionized particles;~~
 - ~~— brushing the applied layer flat with a flattening device (8) for brushing flat an exposed powder particle layer, said flattening device including an electrically insulated blade;~~
 - ~~— activating, in defined areas of said layer, an adhesive present on the powder particles and/or in the powder particle layer using a binder or solvent emitting nozzle or a laser light source; and~~
 - ~~— solidifying the activated adhesive to adhere powder particles to each other within the layer and to the substrate;~~
- ~~wherein at least one ionizing device (6') is associated with said flattening device (8), which ionizing device (6') exposes the applied powder particles to charged particles (7'); and~~
- wherein the majority of the powder particle layers adhered to each other to form the body exhibit a thickness of less than 100 μm .

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40. (withdrawn – currently amended) [[A]] The three dimensional body according to Claim 39, wherein the thickness of the powder particle layers is substantially the average diameter of the individual powder particles.